

(43) International Publication Date  
26 May 2005 (26.05.2005)

PCT

(10) International Publication Number  
WO 2005/046848 A1(51) International Patent Classification<sup>7</sup>: B01D 63/04, C02F 1/44

(21) International Application Number: PCT/KR2004/000216

(22) International Filing Date: 5 February 2004 (05.02.2004)

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:  
10-2003-0081027  
17 November 2003 (17.11.2003) KR

(71) Applicant (for all designated States except US): KOLON INDUSTRIES INC [KR/KR]; KOLON Tower, 1-23, Byulyang-dong, Kwacheon-si, Kyunggi-do 427-040 (KR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): LEE, Moo-Seok [KR/KR]; 5-103 Hanyang 1-cha Apt, Songpa-dong, Songpa-gu, Seoul 138-170 (KR). LEE, Kwang-Jin [KR/KR]; 334-1805 Byoksan Apt, 957-6, Young-tong-dong, Paldal-gu, Suwon-si, Kyunggi-do 442-810

(KR). SHIN, Yong-Cheol [KR/KR]; 108-1301 Suseo Samsung Apt, 747, Suseo-dong, Gangnam-gu, Seoul 135-220 (KR). CHOI, Seong-Hak [KR/KR]; 203 Woosung Heights Villa, 251-5, Yeonmu-dong, Jangan-gu, Suwon-si, Kyunggi-do 440-240 (KR). WOO, Young-Tai [KR/KR]; 105-807 Chongsol APT, Dapsipri-dong, Dongdaemun-gu, Seoul 130-030 (KR).

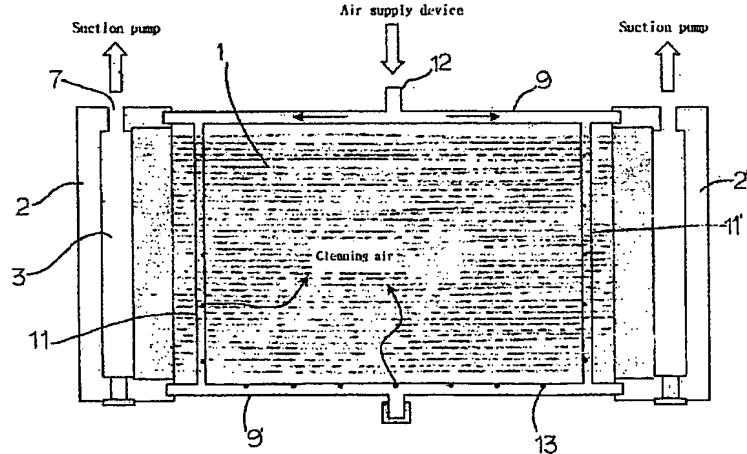
(74) Agent: CHO, Hwal-Rai; Suite No. 1507, Yoksam Heights Bldg, 642-19, Yoksam-dong, Kangnam-gu, Seoul 135-981 (KR).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: SUBMERGED HOLLOW FIBER MEMBRANE MODULE



(57) **Abstract:** The present invention discloses a submerged hollow fiber membrane module which is of such a structure that it is easy to expand a module processing capability according to a treatment capacity, provides convenient module coupling properties and module manufacturing properties, maintains a stable flux under an efficient air diffusion condition and prevents the damage of membranes and water leakage caused by the loosening of module connecting regions. The submerged hollow fiber membrane module comprises [I] two module headers (2 and 2') having a filtrate water collecting portion (3) for collecting filtrate water filtered through hollow fiber membranes and a filtrate water outlet (7), [II] an air diffusion unit 8 consisting of support tubes (9 and 9') fixing the two module headers (2 and 2') while keeping them spaced a predetermined distance and air diffusion tubes (11 and 11') having air diffusion holes (13), and [III] a bundle of hollow fiber membranes (1) having both opposite ends fixed to the insides of the module headers (2 and 2') by an adhesive (6) so as to form a water collecting space within the module headers (2 and 2'), the ends (5) of the hollow portions of the hollow fiber (20) membranes being opened and disposed in parallel to a filtrate water discharge surface (4).

WO 2005/046848 A1



Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

— *with international search report*